



CALS TEST NETWORK

AFCTN Test Report 93-037

AFCTB-ID
92-085



Raster Data Transfer

using:



AAI Corporation/O'Neil & Associates'
Data



MIL-R-28002A (Raster)



Quick Short Test Report



30 November 1992



Prepared for

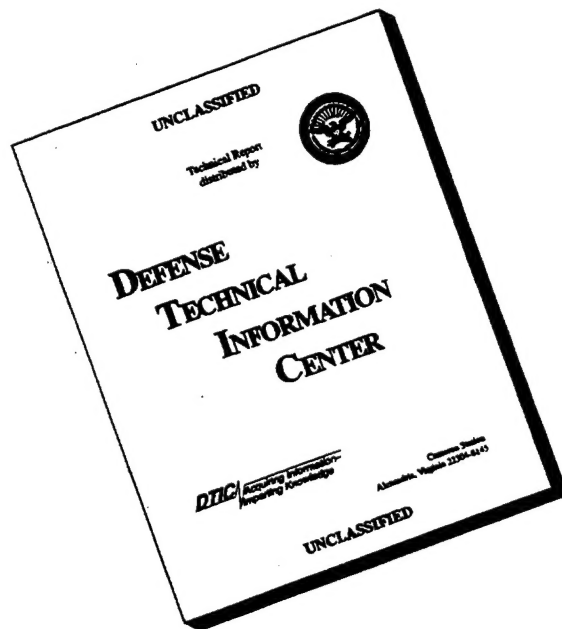
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30 November 1992

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1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze AAI Corporation's interpretation and use of the CALS standards in transferring Raster data. AAI used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 92-085

Date of
Evaluation: 30 November 1992

Evaluators: George Elwood
Air Force CALS Test Bed
Det2 HQ ESC/ENCP
Suite 200
4027 Colonel Glenn Hwy
Dayton OH 45431-1672

Data
Originator: Fran Yeager
AAI Corporation
P.O. Box 126
Hunt Valley MD 21030-0126

John Iarussi
O'Neal Associates
425 North Findley Street
Dayton OH 45404-2203

Data
Description: Technical Manual Test
1 Document Declaration file
273 Raster files

Data
Source System:

Raster

HARDWARE

Unknown

SOFTWARE

Unknown

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

SUN 3/280

AFCTN Tapetool v1.2.8 UNIX

MIL-R-28002 (Raster)

SUN SparcStation 2

ArborText g42tiff

AFCTN validg4

AFCTN calstb.475

IGES Data Analysis (IDA) IGESView 3.0

Island Graphics IslandPaint 3.0

Cheetah

Inset Systems HiJaak V2.02

Corel Ventura Publisher

Standards

Tested:

MIL-STD-1840A

MIL-R-28002A

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was not marked with the magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool* v1.2.8 utility. 274 errors were encountered while evaluating the contents of the tape labels. All of the errors were traced to missing EOF markers in file D001. Because these records were missing, the file count was off by one.

*** ERROR (ANSI X3.27; 6.3.2.1) - ANSI Label EOF1 missing.

*** ERROR (ANSI X3.27; 6.3.2.1) - ANSI Label EOF2 missing.

*** ERROR (ANSI X3.27; 6.5.2) - Invalid file sequence number.
File sequence numbers should increase by 1 for each file.
Previous = 2; Expected = 3; Actual = 2

3.2.2 Declaration and Header Fields

The Document Declaration File and data record headers contained 215 errors and notes. No errors were reported in the Document Declaration File D001.

The Raster files started to report an additional space in the "srcdocid" record at file D001R029. All of the remaining files reported this error.

```
srcdocid: 50301 90026      97384 A      00010001UMEAHN
003
*** ERROR (MIL-STD-1840A; 5.1.4) - Value contains leading spaces.
*** NOTE - Correction made in new %s Header File.
```

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on this tape.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on this tape.

6. Raster Analysis

Because of the number of Raster files (272) on this tape, a sample, consisted of 50 files from throughout the entire set, were tested. All selected files tested with the AFCTN *validg4* utility reported valid files.

Several files were imported and viewed using the AFCTN *calstb.475*. The images appeared straight with few orphan pixels noted.

Different files were converted using Rosetta Technologies' *Prepare* and viewed using *Preview*. No problems were encoun-

tered. A hard copy of file D001R263 is included in the Appendix of this report.

Several files were converted using Arbortext's *g42tiff* utility. No problems were noted. The resulting files were read into Island Graphics' *IslandPaint*. File D001R242 and D001R263 could not be imported because of the lack of memory on the system (32MB), which is not a problem with the file.

Several files were imported into IDA's *IGESView*. No problems were encountered until trying to print some of the files. File D001R263 generated a file system full message, which is not a problem with the file.

Several files were converted using Inset Systems' *HiJaak* to an IMG format. No problems were reported during this procedure. File D001R263 was imported into Corel's *Ventura Publisher* and printed.

The Raster files on the tape meet the CALS MIL-R-28002A specification.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included on this tape.

8. Conclusions and Recommendations

In summary, the tape from AAI Corporation had serious errors. The missing EOF markers in the first file caused errors throughout the remainder of the tape. The majority of Raster files had additional spaces in the "srcdocid" record which were reported as an error. The tape structure does not meet the CALS MIL-STD-1840A requirements.

A sampling of the 272 Raster images was made using available tools in the AFCTB. No errors were reported during this procedure. The Raster files meet the CALS MIL-R-28002A specification.

Because of the critical errors in the tape structure, this tape does not meet the CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release Number 8

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed Nov 25 16:52:42 1992

MIL-STD-1840A File Catalog

File Set Directory: /cals/tapetool8/Set113

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001R001	Raster	F/00128	02048/000014	Extracted
D001R002	Raster	F/00128	02048/000015	Extracted
D001R003	Raster	F/00128	02048/000015	Extracted
D001R004	Raster	F/00128	02048/000013	Extracted
D001R005	Raster	F/00128	02048/000017	Extracted

<<<< PART OF LOG REMOVED HERE >>>>

D001R269	Raster	F/00128	02048/000011	Extracted
D001R270	Raster	F/00128	02048/000010	Extracted
D001R271	Raster	F/00128	02048/000009	Extracted
D001R272	Raster	F/00128	02048/000012	Extracted

Catalog Process terminated normally.

9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release Number 8

Standards referenced:

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed Nov 25 16:45:37 1992

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1MGIC01

MINIGRAPH

4

Label Identifier: VOL1

Volume Identifier: MGIC01

Volume Accessibility:

Owner Identifier: MINIGRAPH

Label Standard Version: 4

HDR1D001

MGIC0100010001000000 92100 00000 000000

Label Identifier: HDR1

File Identifier: D001

File Set Identifier: MGIC01

File Section Number: 0001

File Sequence Number: 0001

Generation Number: 0000

Generation Version Number: 00

Creation Date: 92100

Expiration Date: 00000

File Accessibility:

Block Count: 000000

Implementation Identifier:

HDR2D0204800260

00

Label Identifier: HDR2

Recording Format: D

Block Length: 02048

Record Length: 00260

Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 1.

***** Tape Mark *****

HDR1D001R001 MGIC0100010002000000 92100 00000 000000

Label Identifier: HDR1
File Identifier: D001R001
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0002
Generation Number: 0000
Generation Version Number: 00
Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000000
Implementation Identifier:

HDR2F0204800128

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

*** ERROR (ANSI X3.27; 6.3.2.1) - ANSI Label EOF1 missing.

*** ERROR (ANSI X3.27; 6.3.2.1) - ANSI Label EOF2 missing.

HDR1D001R001 MGIC0100010002000000 92100 00000 000000

Label Identifier: HDR1
File Identifier: D001R001
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0002
Generation Number: 0000
Generation Version Number: 00

Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000000
Implementation Identifier:

*** ERROR (ANSI X3.27; 6.5.2) - Invalid file sequence number.
File sequence numbers should increase by 1 for each file.
Previous = 2; Expected = 3; Actual = 2

HDR2F0204800128

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 14.

***** Tape Mark *****

EOF1D001R001

MGIC0100010002000000 92100 00000 000014

Label Identifier: EOF1
File Identifier: D001R001
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0002
Generation Number: 0000
Generation Version Number: 00
Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000014
Implementation Identifier:

EOF2F0204800128

00

Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 00128

Offset Length: 00

***** Tape Mark *****

HDR1D001R002 MGIC0100010003000000 92100 00000 000000

Label Identifier: HDR1
File Identifier: D001R002
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0003
Generation Number: 0000
Generation Version Number: 00
Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000000
Implementation Identifier:

*** ERROR (ANSI X3.27; 6.5.2) - Invalid file sequence number.
File sequence numbers should increase by 1 for each file.
Previous = 3; Expected = 4; Actual = 3

HDR2F0204800128

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 15.

***** Tape Mark *****

EOF1D001R002 MGIC0100010003000000 92100 00000 000015

Label Identifier: EOF1
File Identifier: D001R002
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0003
Generation Number: 0000

Generation Version Number: 00
Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000015
Implementation Identifier:

EOF2F0204800128

00

Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

HDR1D001R003

MGIC0100010004000000 92100 00000 000000

Label Identifier: HDR1
File Identifier: D001R003
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0004
Generation Number: 0000
Generation Version Number: 00
Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000000
Implementation Identifier:

*** ERROR (ANSI X3.27; 6.5.2) - Invalid file sequence number.
File sequence numbers should increase by 1 for each file.
Previous = 4; Expected = 5; Actual = 4

HDR2F0204800128

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

***** Tape Mark *****

```
Label Identifier: EOF1
File Identifier: D001R003
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0004
Generation Number: 0000
Generation Version Number: 00
Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000015
Implementation Identifier:
```

```
Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00
```

***** Tape Mark *****

<<<< PART OF LOG REMOVED HERE >>>>

***** Tape Mark *****

```
Label Identifier: HDR1
File Identifier: D001R272
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0273
Generation Number: 0000
Generation Version Number: 00
Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000000
```

Implementation Identifier:

*** ERROR (ANSI X3.27; 6.5.2) - Invalid file sequence number.
File sequence numbers should increase by 1 for each file.
Previous = 273; Expected = 274; Actual = 273

HDR2F0204800128

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 12.

***** Tape Mark *****

EOF1D001R272

MGIC0100010273000000 92100 00000 000012

Label Identifier: EOF1
File Identifier: D001R272
File Set Identifier: MGIC01
File Section Number: 0001
File Sequence Number: 0273
Generation Number: 0000
Generation Version Number: 00
Creation Date: 92100
Expiration Date: 00000
File Accessibility:
Block Count: 000012
Implementation Identifier:

EOF2F0204800128

00

Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

***** Tape Mark *****

End of Volume MGIC01

End Of Tape File Set

Deallocating /dev/rmt0...

Tape Import Process terminated with 274 error(s), 0 warning(s),
and 0 note(s).

9.3 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release Number 8

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

MIL-R-28002 (1989) - Raster Graphics Representation In Binary
Format, Requirements For

Wed Nov 25 16:52:44 1992

MIL-STD-1840A File Set Evaluation Log

File Set: Set113

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: MINIGRAPH Inc.

srcdocid: AAI92A

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19921009

dstsys: AF'S EDCARS SYSTEM

dstdocid: F-16 DRLMS

dstrelid: NONE

dtetrm: 19921009

dlvacc: NONE

filcnt: R272

ttlcls: Unclassified

doccls: Unclassified

doctyp: Engineering drawings

docttl: F-16 DRLMS

Found file: D001R001

Extracting Raster Header Records...

Evaluating Raster Header Records...

srcdocid: PL9156972

98747 -

00010001UMEAHN

dstdocid: NONE

txtfilid: NONE

figid: NONE

srcgph: NONE

doccls: NONE

rtype: 1

rorient: 270,270
rpelcnt: 001632,001608
rdensty: 0200
notes: for srcdocid description see MIL-STD-804C;

Saving Raster Header File: D001R001_HDR
Saving Raster Data File: D001R001_GR4

Found file: D001R002
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: PL9156972 98747 - 00010001UMEAHN
dstdocid: NONE
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 270,270
rpelcnt: 001632,001608
rdensty: 0200
notes: for srcdocid description see MIL-STD-804C;

Saving Raster Header File: D001R002_HDR
Saving Raster Data File: D001R002_GR4

<<<<< PART OF LOG REMOVED HERE >>>>>

Found file: D001R029
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: 40133 40020 97384 - 00010001UMEAHN
*** ERROR (MIL-STD-1840A; 5.1.4) - Value contains leading spaces.
*** NOTE - Correction made in new %s Header File.
dstdocid: NONE
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 270,270
rpelcnt: 001632,001608
rdensty: 0200
notes: for srcdocid description see MIL-STD-804C;

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Raster File D001R029.

Saving Raster Header File: D001R029_HDR

Saving Raster Data File: D001R029_GR4

<<<< PART OF LOG REMOVED HERE >>>>

Found file: D001R270

Extracting Raster Header Records...

Evaluating Raster Header Records...

srcdocid: 50301 90026 97384 - 00010001UMEAHN
*** ERROR (MIL-STD-1840A; 5.1.4) - Value contains leading spaces.
*** NOTE - Correction made in new %s Header File.
dstdocid: NONE
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 270,270
rpelcnt: 001632,001608
rdensty: 0200
notes: for srcdocid description see MIL-STD-804C;

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Raster File D001R270.

Saving Raster Header File: D001R270_HDR

Saving Raster Data File: D001R270_GR4

Found file: D001R271

Extracting Raster Header Records...

Evaluating Raster Header Records...

srcdocid: 50301 90026 97384 - 00010001UMEAHN
*** ERROR (MIL-STD-1840A; 5.1.4) - Value contains leading spaces.
*** NOTE - Correction made in new %s Header File.
dstdocid: NONE
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 270,270
rpelcnt: 001632,001608
rdensty: 0200
notes: for srcdocid description see MIL-STD-804C;

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Raster File D001R271.
Saving Raster Header File: D001R271_HDR
Saving Raster Data File: D001R271_GR4

Found file: D001R272
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: 50301 90026 97384 A 00010001UMEAHN
*** ERROR (MIL-STD-1840A; 5.1.4) - Value contains leading spaces.
*** NOTE - Correction made in new %s Header File.
dstdocid: NONE
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 270,270
rpelcnt: 001632,001608
rdensty: 0200
notes: for srcdocid description see MIL-STD-804C;

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Raster File D001R272.
Saving Raster Header File: D001R272_HDR
Saving Raster Data File: D001R272_GR4

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

A total of 215 error(s), 0 warning(s), and 215 note(s) were
encountered in Document D001.

A grand total of 215 error(s), 0 warning(s), and 215 note(s) were
encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

10.1.1 Output Preview

